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QUALCOMM INCORPORATED 5775 MOREHOUSE DR. SAN DIEGO, CA 92121			PHAN, TRI H	
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			2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/811,056	Applicant(s) DEJACO ET AL.	
	Examiner Tri H. Phan	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 14 and 17-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-7, 14, 18-26 and 28-30 is/are rejected.
- 7) ☒ Claim(s) 17 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment/Arguments

1. This Office Action is in response to the Response/Amendment filed on July 7th, 2006. Claims 8-13 and 15-16 are now canceled and new claims 21-30 are added. Claims 1-7, 14, and 17-30 are now pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 6-7, 14, 20-21, 25-26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **3GPP** (3rd Generation Partnership Project: Technical Specification Group Services & System Aspects; 3GTS 28.062 V1.0.0 (2000-12); pages 1-23; hereinafter refer as '**TS 28.062**') in view of **Lehtimäki, Matti** (U.S.6,125,120; hereinafter refer as '**Lehtimäki**').

- In regard to claims 1 and 14, **TS 28.062** discloses, *a method (claim 1) and apparatus (claim 14) for transmitting wideband speech signals over a narrowband communication system* (for example see section 4.1; pages 11-12; figures 4.1-1 and 4.1-2; where the call between MS/UE is performed in GSM/3G FR, EFR... configurations, e.g. "wideband", through the speech codecs of the inter-PLMN, e.g. "narrowband communication system"), *comprising means for generating a narrowband digital signal at a base station ('decoder in the transcoder' in*

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figures 4.1-1, 4.2-1; for example see sections 4.1-4.2, pages 12-14; which converts the MS/UE's over the air speech signal to the coded PCM speech according to the ITU-T G.711 A-law or μ -law, e.g. *"narrowband digital signal"*, in the inter-PLMN) *from a plurality of data packets received from a remote station* ('MS/UE' or 'Terminals' in figures 4.1-1, 4.1-2, 4.2-1), *wherein the plurality of data packets carry a wideband speech signal* (wherein, it is obvious that *"wideband speech signal"*, e.g. MS/UE's over the air speech signal, is carried by frames or packets in the GSM/3G); *means for separating the narrowband digital signal from the plurality of data packets at the second base station* ('encoder in the transcoder' in figures 4.1-1, 4.2-1); *and means for forwarding only the plurality of data packets to a second remote station* ('MS/UE' in figures 4.1-1, 4.2-1). TS 28.062 does provide the stealing process, e.g. *"puncturing"*, which steals the least significant bit of the transmission PCM speech samples on the inter-PLMN transmission link as disclosed in figures 4.1-1, 4.2-1, section 4.2, pages 12-13, e.g. *"means for puncturing the narrowband digital signal carrying the wideband speech signal and means for transmitting the punctured narrowband digital signal over the narrowband communication system to a second base station"*, but fails to explicitly disclose how to steal, e.g. *"puncturing"*, the least significant bit in the transmission PCM speech samples. However, such implementation is known in the art.

For example, **Lehtimäki** discloses in Figs. 1, 3A-B and in the respective portions of the specification about the method and transmission equipment for the interexchange connection between the public switched telephone network 'PSTN' and the mobile communication networks such as GSM, for mobile to mobile call 'MMC', (For example see Fig. 1; col. 2, line 39 through col. 5, line 36; col. 13, lines 12-34); forming the subchannels in one or two least significant bits

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of the PCM samples in the PCM channel between the transmission equipment for vocoded speech or data (*“means for puncturing the narrowband digital signal with the plurality of data packets”*) by inserting the TRAU frame’s bits (For example see Figs. 3A-B; col. 7, line 38 through col. 8, line 4) and separating the TRAU frames and PCM samples (*“separating the narrowband digital signal”*; For example see Fig. 7; col. 9, lines 4-45).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **Lehtimäki**, by stealing the least significant bits of the PCM samples in the PCM channel between the transmission equipment for vocoded speech or data into the variable rate compressed voice packets as taught by **TS 28.062**, with the motivation being to provide the compressed method for vocoded speech or data between the transmission equipment as disclosed in the **Lehtimäki**’s abstract.

- Regarding claims 2, 20-21 and 30, **TS 28.062** further discloses, *wherein the puncturing of the narrowband digital signal occurs in the least significant bits of the narrowband digital signal* (for example see section 4.2, page 13; wherein the least or two least significant bits ‘LSB’ are stealing from the PCM speech samples, e.g. *“puncturing the least significant bits of the narrowband digital signal”*) and wherein **Lehtimäki** further discloses the method for forming the subchannels in one or two least significant bits of the PCM samples.

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **Lehtimäki**, by stealing the least significant bits of the PCM samples in the PCM channel between the transmission equipment for vocoded speech or data into the variable rate compressed voice packets as taught by **TS 28.062**,

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with the motivation being to provide the compressed method for vocoded speech or data between the transmission equipment as disclosed in the **Lehtimäki**'s abstract.

- In regard to claims 6-7 and 25-26, **TS 28.062** further discloses, *wherein the narrowband digital signal is a pulse code modulated 'PCM' signal ('PCM speech samples') and about the step of negotiating for tandem-free operations between the first base station and the second base station before the step of puncturing* (for example see section 4.2, paragraphs 1-4, page 12; wherein the codec mismatch has to resolve before TFO is activated; section 6.2, pages 24-25; wherein the TFO negotiation is used for resolving the codec mismatch, and the call is connected to PSTN if the negotiation is failed).

4. Claims 3-5 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **3GPP** (3rd Generation Partnership Project: Technical Specification Group Services & System Aspects; 3GTS 28.062 V1.0.0 (2000-12); pages 1-23) in view of **Lehtimäki, Matti** (U.S.6,125,120) as applied to claims 1-2 and 14 in part 3 rejection above, and further in view of **Tseng et al.** (U.S.6,172,974; hereinafter refer as '**Tseng**').

- In regard to claims 3-5 and 22-24, **TS 28.062** further discloses about *disabling a plurality of in-path equipment at the first base station and the second base station* (for example see Section 4.1, page 11; figure 4.1-2; wherein the transcoding functions in the transcoder units are bypassed or disabled or switched-off, e.g. "*disabling the plurality of in-path equipment*", for avoiding the double transcoding in the network; and wherein the expected behavior of in-path

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equipment 'IEP' with Tandem Free Operation defines in Annex B), but fails to explicitly disclose *wherein the plurality of in-path equipment comprise echo cancellers or a decoding portion of a vocoder*. However, such implementation is known in the art.

For example, **Tseng** discloses about the method and apparatus for achieving tandem free operation 'TFO' capabilities between terminals of the communication network having tandemed vocoder; wherein the decoder 26, 28 in the vocoder 24 ("*decoding portion of the vocoder*"; For example see Fig. 4) and disabling network echo cancellers 50 in the original and terminal elements, in the forward and backward directions, ("*disabling echo cancellers*"; For example see Fig. 4; col. 2, lines 50-67; col. 6, lines 44-62).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **Tseng**, by disabling the network echo canceller to perform the tandem free operation 'TFO' capabilities into the in-path equipments as taught by the combination of **TS 28.062** and **Lehtimäki**, with the motivation being to improve the quality of the speech signals transmitted between terminals in the communication network having tandem vocoder as disclosed in **Tseng**: col. 1, lines 17-25.

5. Claims 18 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over **3GPP** (3rd Generation Partnership Project: Technical Specification Group Services & System Aspects; 3GTS 28.062 V1.0.0 (2000-12); pages 1-23) in view of **Lehtimäki, Matti** (U.S.6,125,120) as applied to claims 1-2 and 14 in part 3 rejection above, and further in view of **Miet et al.** (U.S.6,681,202; hereinafter refer as '**Miet**').

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- In regard to claims 18 and 28, the combination of **TS 28.062** and **Lehtimäki** fails to explicitly disclose, wherein the wideband speech signal includes “*frequency components between 3400 Hz and 7000Hz*”. However, such implementation is known in the art.

For example, **Miet** discloses, *wherein the wideband speech signal includes frequency components between 3400 Hz and 7000Hz* (for example see col. 1, lines 14-20; col. 2, lines 38-57).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **Miet**, by implement the linear prediction coding into the transcoder as taught by the combination of **TS 28.062** and **Lehtimäki**, with the motivation being to obtain an extended band speech signal to improve the audio quality of the speech signal in the wider band as disclosed in **Miet**: col. 1, lines 6-11; col. 2, lines .

6. Claims 19 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **3GPP** (3rd Generation Partnership Project: Technical Specification Group Services & System Aspects; 3GTS 28.062 V1.0.0 (2000-12); pages 1-23) in view of **Lehtimäki, Matti** (U.S.6,125,120) as applied to claims 1-2 and 14 in part 3 rejection above, and further in view of **Takashima et al.** (U.S.5,983,172; hereinafter refer as ‘**Takashima**’).

- In regard to claims 19 and 29, the combination of **TS 28.062** and **Lehtimäki** fails to explicitly disclose, wherein the wideband speech signal comprises an “*acoustic signal in the range of 50 Hz to 7000 Hz*”. However, such implementation is known in the art.

For example, **Takashima** discloses about the *acoustic signal in the range of 50 Hz to 7000 Hz* (for example see col. 6, lines 40-43).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **Takashima**, by implement the coding/decoding apparatus into the transcoder as taught by the combination of **TS 28.062** and **Lehtimäki**, with the motivation being to obtain a high quality decoded acoustic signal at a low bit rate as disclosed in **Takashima**: col. 1, lines 9-12.

Response to Amendment/Arguments

7. Applicant's arguments filed on July 26th, 2006 with respect to claims 1-7, 14, 18-26 and 28-30 have been fully considered but they are not persuasive.

In the REMARKS, pages 6-9, regarding claims 1-2, Applicant mainly argues that the combination of **TS 28.062** and **Lehtimäki** fails to disclose the “*method for transmitting wideband speed signals over a narrowband communication system*” and also argues that the words “*narrowband*” and “*wideband*” do not disclose in references. Examiner respectfully disagrees. Even though references do not disclose words such as “*narrowband*” and “*wideband*” communication system; however, it is commonly used for GSM, PSTN networks for narrowband communication systems and 3G, WCDMA are for wideband communications systems based on their data transmission rates over the communication channel bandwidth: narrowband up to 64 kbit/s, wideband over 64 kbit/s to 2 Mbit/s, etc.; for example, the humans perceive speech “*narrowband speech signal*” is digitized by using the PCM 8-bits symbols for sampling data (8000 samples/sec.times.8 bits/sample=64,000 bps) up to 4 kHz bandwidth (“*narrowband digital*

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signal”), while the “*wideband speech signal*” samples data at 16,000 samples/second.times.8 bits/sample=128,000 bps, limited to 8 kHz bandwidth, for transmission channel capacity. The TS 28.062 does provide the TFO configuration between GSM, 3G networks (see figures 4.2-2, 4.2-3 and 4.2-4) for transmitting the TFO frames (“*data packets*”, “*TFO messages*”) with the stealing process, e.g. “*puncturing*”, which steals the least significant bit of the transmission PCM speech samples as disclosed in figures 4.1-1, 4.2-1, section 4.2, pages 12-13; but fails to explicitly disclose how to steal, e.g. “*puncturing*”, the least significant bit in the transmission PCM speech samples. **Lehtimäki** discloses in Figs. 1, 3A-B and in the respective portions of the specification about the method and transmission equipment for the interexchange connection between the public switched telephone network ‘PSTN’ and the mobile communication networks such as GSM, for mobile to mobile call ‘MMC’, (For example see Fig. 1; col. 2, line 39 through col. 5, line 36; col. 13, lines 12-34); forming the subchannels in one or two least significant bits of the PCM samples in the PCM channel between the transmission equipment for vocoded speech or data (“*means for puncturing the narrowband digital signal with the plurality of data packets*”) by inserting the TRAU frame’s bits (For example see Figs. 3A-B; col. 7, line 38 through col. 8, line 4) and separating the TRAU frames and PCM samples (“*separating the narrowband digital signal*”; For example see Fig. 7; col. 9, lines 4-45) through the use of transcoder. Even though, references do not use the word “*puncturing*”; however, methods such as stealing, robbing, and “*puncturing*” do provide method for replacing the least significant bits with PCM speech samples. Therefore, Examiner concludes that the combination of TS 28.062 and **Lehtimäki** teaches the arguable features.

Claims 3-5 and 18-19 are rejected as in Parts 4-6 above of this Office action and by virtue of their dependence from claim 1.

Allowable Subject Matter

8. Claims 17 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Henderson et al. (U.S.6,353,666), **Abe et al.** (U.S.5,581,652), **Backstrom et al.** (WO 99/63775) and **Gibbs et al.** (GB 2357682) are all cited to show devices and methods for improving coding technique in the wideband/narrowband of the telecommunication architectures, which are considered pertinent to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tri H. Phan, whose telephone number is (571) 272-3074. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on (571) 272-3179.

Any response to this action should be mailed to:

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, whose telephone number is (571) 272-2600.

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Tri H. Phan
September 22, 2006



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